ABSTRACT OF THE DISCLOSURE

A purified sulfohydrolase having a purity level based on total amount of protein of at least about 40 wt%. Isolated nucleic acid sequence and amino acid sequences. A process for purifying at least one sulfohydrolase, including subjecting an extract from seaweed to fractionation to obtain fractions; and subjecting at least one of the fractions to phenyl sepharose chromatography to obtain sepharose fractions containing at least one sulfohydrolase. An enzymatically modified compound which has been modified by an isolated sulfohydrolase having a purity level based on total amount of protein of at least about 40 wt%. A process of enzymatically modifying a sulfated compound, including combining at least one sulfohydrolase, having a purity level based on total amount of protein of at least about 40 wt%, with a sulfated compound form a reaction mixture; and incubating the reaction mixture to remove sulfate groups from the sulfated compound to form an enzymatically modified compound. A process of enzymatically modifying a sulfated compound, including incubating a first sulfohydrolase with a sulfated compound to remove sulfate groups from the sulfated compound to form an intermediate compound; andsubsequently incubating the intermediate compound with a second sulfohydrolase to remove sulfate groups to form an enzymatically modified compound. A method for extracting one of nu- and mu-carrageenan from seaweed, including dispersing seaweed in a salt solution including K_2CO_3 to form a dispersion; filtering the dispersion to obtain a liquid; ultrafiltering the dispersion to remove salts; concentrating the liquid; adjusting the pH of the liquid to about 8 to 8.5; and precipitating one of nu- and mu-carrageenan from the liquid.